|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 492 | 492 | 492 | 492 | 490 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 |
| 372 | 445 | 407 | 447 | 417 | 447 | 409 | 442 | 398 | 440 | 420 | 431 | 394 | 444 | 428 | 442 |
| 1 | 2 | 4 | 1 | 2 | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 2 | 4 | 2 | 4 |
| 16,1 | 5,5 | 6,3 | 3,5 | 3,5 | 4 | 2,5 | 6,3 | 8,7 | 5,6 | 9,6 | 5,2 | 2,3 | 5,6 | 5,7 | 5,9 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 492 | 492 | 492 | 492 | 491 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 490 | 492 | 491 | 492 |
| 459 | 445 | 342 | 438 | 346 | 431 | 417 | 465 | 410 | 410 | 405 | 450 | 389 | 458 | 410 | 454 |
| 2 | 2 | 4 | 3 | 3 | 3 | 1 | 2 | 2 | 3 | 1 | 2 | 2 | 1 | 1 | 1 |
| 4,5 | 6,3 | 2,3 | 5,6 | 2,5 | 4,9 | 4,5 | 4,9 | 6,9 | 6,6 | 4,7 | 7,7 | 2,6 | 6,6 | 13,4 | 3,9 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 492 | 491 | 492 | 492 | 492 |
| 430 | 461 | 385 | 468 | 409 | 438 | 403 | 425 | 435 | 443 | 369 | 457 | 398 | 433 | 401 | 425 |
| 1 | 3 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 8,7 | 5,5 | 1,8 | 5,7 | 2,8 | 5 | 3,4 | 4,7 | 4,3 | 5,2 | 4,8 | 3,9 | 2,4 | 5,1 | 8,6 | 3,6 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 653 | 655 | 655 | 655 |
| 548 | 560 | 553 | 580 | 572 | 575 | 566 | 570 | 507 | 602 | 543 | 575 | 531 | 566 | 582 | 589 |
| 6 | 2 | 2 | 2 | 2 | 1 | 12 | 3 | 2 | 3 | 15 | 4 | 2 | 4 | 13 | 2 |
| 4,8 | 4 | 5,1 | 4,1 | 1,9 | 4,7 | 6,5 | 5 | 8,4 | 7,3 | 5,4 | 5,3 | 2,5 | 6,4 | 6,7 | 5,9 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 654 | 655 | 655 | 655 | 655 | 655 | 654 | 655 | 655 | 655 | 652 | 655 | 654 | 655 | 655 | 655 |
| 552 | 576 | 548 | 594 | 485 | 605 | 568 | 588 | 540 | 612 | 530 | 619 | 527 | 548 | 569 | 588 |
| 2 | 1 | 2 | 1 | 3 | 4 | 2 | 1 | 2 | 1 | 3 | 4 | 2 | 1 | 12 | 1 |
| 4,2 | 5,9 | 4,8 | 8,1 | 4,2 | 5,8 | 5,9 | 4,6 | 10,7 | 4,6 | 4,1 | 4,8 | 1,6 | 4,1 | 11 | 4,4 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 | 655 |
| 550 | 584 | 566 | 593 | 505 | 592 | 566 | 588 | 511 | 591 | 506 | 595 | 555 | 569 | 506 | 569 |
| 2 | 3 | 2 | 3 | 3 | 3 | 1 | 4 | 2 | 3 | 2 | 3 | 2 | 3 | 1 | 4 |
| 9,7 | 6 | 2,1 | 5,9 | 3,4 | 5,1 | 7,8 | 4,8 | 2,4 | 8,9 | 5,2 | 6,8 | 5,2 | 7,1 | 2,8 | 6,5 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 548 | 550 | 550 | 550 | 550 | 550 | 549 | 550 | 549 | 550 | 550 | 550 | 550 | 550 | 549 | 550 |
| 440 | 523 | 446 | 518 | 471 | 495 | 442 | 503 | 463 | 484 | 497 | 500 | 467 | 500 | 471 | 502 |
| 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 14 | 1 | 1 | 1 | 21 | 3 | 1 | 1 |
| 7,1 | 7,5 | 8,1 | 4,7 | 1,9 | 9 | 5,7 | 7,2 | 3,3 | 6,4 | 6,9 | 4,9 | 3,9 | 5,9 | 5,1 | 3,5 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 548 | 550 | 549 | 550 | 550 | 550 |
| 420 | 499 | 393 | 483 | 500 | 499 | 426 | 503 | 453 | 412 | 477 | 481 | 495 | 511 | 397 | 505 |
| 2 | 1 | 1 | 1 | 4 | 1 | 1 | 3 | 4 | 2 | 1 | 2 | 1 | 1 | 2 | 4 |
| 8,7 | 4,7 | 6,5 | 5,1 | 2,9 | 3,3 | 3,3 | 4,9 | 10,6 | 4,8 | 5,2 | 5,2 | 2,1 | 6,9 | 10,1 | 5,3 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 549 | 550 | 550 | 550 | 550 | 550 | 550 | 550 |
| 473 | 501 | 470 | 494 | 442 | 502 | 465 | 489 | 436 | 503 | 446 | 492 | 388 | 494 | 410 | 464 |
| 2 | 1 | 1 | 1 | 2 | 3 | 3 | 4 | 2 | 1 | 4 | 2 | 2 | 2 | 2 | 1 |
| 10,5 | 3,2 | 7,6 | 6,4 | 2,1 | 5,5 | 7,1 | 6 | 4,7 | 5,1 | 7,5 | 4,6 | 4,6 | 5,2 | 4,4 | 5,2 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 631 | 632 | 632 | 632 | 632 | 632 | 632 | 632 | 631 | 632 | 632 | 632 | 631 | 632 | 632 | 632 |
| 492 | 559 | 458 | 568 | 519 | 551 | 503 | 590 | 524 | 580 | 508 | 578 | 484 | 552 | 554 | 547 |
| 1 | 4 | 32 | 3 | 1 | 3 | 2 | 1 | 1 | 3 | 1 | 2 | 3 | 3 | 1 | 3 |
| 6,4 | 4,9 | 9,4 | 5,7 | 2,3 | 3,6 | 7,8 | 4,6 | 2,2 | 6,9 | 2,8 | 4,4 | 4 | 5,8 | 2,1 | 5,2 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 632 | 632 | 632 | 632 | 632 | 632 | 632 | 632 | 631 | 632 | 631 | 632 | 629 | 632 | 630 | 632 |
| 489 | 563 | 510 | 541 | 461 | 557 | 529 | 532 | 499 | 517 | 546 | 565 | 526 | 556 | 511 | 571 |
| 2 | 2 | 2 | 1 | 5 | 4 | 1 | 1 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 3 |
| 2,9 | 4,2 | 2,3 | 3,8 | 6,2 | 6,9 | 3,2 | 7,9 | 10,7 | 5,1 | 5,8 | 4,5 | 2,2 | 5,4 | 4,2 | 5,3 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 632 | 632 | 632 | 632 | 632 | 632 | 632 | 632 | 631 | 632 | 631 | 632 | 631 | 632 | 632 | 632 |
| 476 | 546 | 507 | 567 | 519 | 524 | 449 | 548 | 464 | 568 | 539 | 577 | 453 | 560 | 407 | 592 |
| 2 | 2 | 3 | 1 | 2 | 4 | 1 | 5 | 4 | 2 | 3 | 1 | 2 | 3 | 1 | 1 |
| 6,1 | 4 | 15,7 | 5 | 2,4 | 4,9 | 9,2 | 6,8 | 2,3 | 7,5 | 2,4 | 5,3 | 2,6 | 5,4 | 4,2 | 5,8 |
| Danzig \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Single-point crossover  Saltation  Linear-rank | Danzig \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Point mutation  Linear-rank | Danzig \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Inversion  Linear-rank | Danzig \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Translocation  Linear-rank | Danzig \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Two-point crossover  Saltation  Linear-rank |
| 608 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 611 | 612 | 612 | 612 | 612 | 612 |
| 510 | 560 | 496 | 528 | 539 | 566 | 522 | 531 | 506 | 560 | 508 | 543 | 505 | 542 | 481 | 534 |
| 2 | 1 | 3 | 2 | 1 | 2 | 2 | 4 | 1 | 2 | 1 | 1 | 3 | 2 | 3 | 2 |
| 2,5 | 5,6 | 9,4 | 4,9 | 5,4 | 4,8 | 4,9 | 5,7 | 4,2 | 5,4 | 4,9 | 6,1 | 4 | 5,3 | 6,2 | 5,3 |
| Danzig \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Point mutation  Linear-rank | Danzig \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Inversion  Linear-rank | Danzig \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Translocation  Linear-rank | Danzig \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Danzig \_algorithm  Uniform crossover  Saltation  Linear-rank | Random \_algorithm  Single-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Single-point crossover  Point mutation  Linear-rank | Random \_algorithm  Single-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Single-point crossover  Inversion  Linear-rank | Random \_algorithm  Single-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Single-point crossover  Translocation  Linear-rank | Random \_algorithm  Single-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Single-point crossover  Saltation  Linear-rank |
| 611 | 612 | 612 | 612 | 611 | 612 | 612 | 612 | 612 | 612 | 610 | 612 | 609 | 612 | 612 | 612 |
| 482 | 537 | 523 | 542 | 515 | 547 | 500 | 536 | 504 | 574 | 474 | 548 | 501 | 554 | 500 | 543 |
| 2 | 3 | 2 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 4 | 3 | 3 |
| 7,2 | 7,9 | 2,3 | 6 | 2,3 | 6,1 | 9,6 | 5,5 | 3,4 | 6,3 | 5,2 | 5,5 | 4,2 | 4,7 | 8,1 | 4,8 |
| Random \_algorithm  Two-point crossover  Point mutation  Betta-Tournament | Random \_algorithm  Two-point crossover  Point mutation  Linear-rank | Random \_algorithm  Two-point crossover  Inversion  Betta-Tournament | Random \_algorithm  Two-point crossover  Inversion  Linear-rank | Random \_algorithm  Two-point crossover  Translocation  Betta-Tournament | Random \_algorithm  Two-point crossover  Translocation  Linear-rank | Random \_algorithm  Two-point crossover  Saltation  Betta-Tournament | Random \_algorithm  Two-point crossover  Saltation  Linear-rank | Random \_algorithm  Uniform crossover  Point mutation  Betta-Tournament | Random \_algorithm  Uniform crossover  Point mutation  Linear-rank | Random \_algorithm  Uniform crossover  Inversion  Betta-Tournament | Random \_algorithm  Uniform crossover  Inversion  Linear-rank | Random \_algorithm  Uniform crossover  Translocation  Betta-Tournament | Random \_algorithm  Uniform crossover  Translocation  Linear-rank | Random \_algorithm  Uniform crossover  Saltation  Betta-Tournament | Random \_algorithm  Uniform crossover  Saltation  Linear-rank |
| 612 | 612 | 611 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 | 612 |
| 510 | 575 | 460 | 570 | 468 | 577 | 505 | 516 | 507 | 546 | 443 | 554 | 449 | 570 | 505 | 553 |
| 3 | 2 | 3 | 3 | 1 | 3 | 4 | 3 | 1 | 2 | 2 | 3 | 1 | 2 | 2 | 2 |
| 3,2 | 4,6 | 9 | 5,4 | 2,5 | 5,3 | 3,7 | 6,3 | 4 | 6 | 3,8 | 5,5 | 2,6 | 5,7 | 4,9 | 8 |